

In particular, none of the applied references, alone or in combination, disclose or suggest a method of controlling an internal combustion engine and associated control system that includes controlling burning of fuel to operate the internal combustion engine, and injecting fuel into the internal combustion engine during a moving state of the engine, without causing the fuel to be burned, before a normal operation of the engine by fuel being burned, as recited in independent claim 1, and similarly recited in independent claims 11 and 21.

Yamamoto teaches an in-cylinder injection type internal combustion engine that includes a main fuel injection control unit that drives a fuel injector to inject fuel directly into a combustion chamber so that premixed combustion or stratified charge combustion takes place depending upon operating conditions of the engine (Abstract). Moreover, Yamamoto teaches a fuel injection control device 25 that includes a normal fuel injection control unit 26 that drives an injector 8 to inject fuel that is normally burned, and an additional fuel injection control unit 27 that drives the injector 8 to inject additional fuel during an expansion stroke, to activate the catalysts 6A and 6B (col. 7, lines 54-60). Yamamoto also teaches that the control unit 27 determines whether the catalysts 6A and 6B are in activated states or not, and if the catalysts 6A and 6B are not in the activated states, the control unit 27 drives the injector 8 to inject additional fuel that is to be ignited through low temperature oxidizing reaction (col. 8, lines 9-19). Furthermore, Yamamoto teaches that additional fuel injected from the injector 8 is ignited through the low temperature oxidizing reaction, and burns at a relatively low temperature as compared with the main combustion (col. 16, lines 9-14). Accordingly, Yamamoto clearly teaches that the fuel that is injected into the engine, regardless of the operating mode chosen, is to be burned. Accordingly, Yamamoto does not teach injecting fuel into the engine without causing the fuel to be burned, as recited in independent claim 1, and similarly recited in independent claims 11 and 21.

Sugiura teaches a system and method that judges whether the lean operation in which the air-fuel ratio is set to be on the lean side with respect to the theoretical air-fuel ratio is currently performed or not if conditions of stopping an engine are satisfied (Abstract). Moreover, Sugiura teaches controlling the fuel supply to the engine 1 and the ignition timing when there is no stop flag FESTPA (col. 7, lines 11-14). Sugiura also teaches that the engine 1 is stopped by interrupting the fuel supply to the engine 1 and the supply of the driving signal to the ignition plugs 111 (col. 7, lines 40-42). Furthermore, Sugiura teaches a judgment on whether an enrichment time TRICH has elapsed after the timing when the stop flag FESTPA is set to "1" or not, and if the enrichment time TRICH has elapsed, the engine 1 is stopped, and the enrichment time TRICH is set to a time period when, under a state where the NOx absorbent of the NOx purifying apparatus 116 absorb NOx to its limit, the whole amount of the absorbed NOx can be reduced (col. 7, lines 43-55). Sugiura also teaches that when the engine 1 is to be stopped during the lean operation, reduction enrichment is executed during the enrichment time TRICH, and the engine 1 is stopped (col. 7, lines 56-59). Accordingly, Sugiura teaches reducing the amount of absorbed NOx in an engine. However, Sugiura does not disclose or suggest injecting fuel without causing the fuel to be burned, as recited in independent claims 1, 11 and 21. Thus, Sugiura also fails to disclose or suggest each and every feature of independent claims 1, 11 and 21.

For at least these reasons, independent claims 1, 11 and 21, and their dependent claims, are patentable over the applied references. Thus, withdrawal of the rejections of the claims under 35 U.S.C. §102(b) and 35 U.S.C. §102(e) is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:  
Terminal Disclaimer

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